



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

DEC 6 2006

To All Interested Government Agencies and Public Groups:

In accordance with the U.S. Environmental Protection Agency's (EPA) procedures for the preparation of environmental impact statements (EIS), an environmental review has been performed on the proposed agency action below:

Project Name: Western Ramapo Sewer Extension and Advanced Wastewater Treatment Plant (AWT)

Purpose of Project: To provide protection of surface water and groundwater resources in the project area and to further augment river flows during dry periods to reduce restrictions on the usage of the United Water Resources wellfield.

Project Originators: Rockland County Sewer District No. 1

Project Location: Villages of Hillburn and Sloatsburg and a portion of the Unincorporated Town of Ramapo, Rockland County, New York

Project Description: The proposed project is to extend sewers to Hillburn, Sloatsburg, and a portion of Ramapo to collect wastewater and convey it to a new advanced wastewater treatment plant. The project will consist of a 1.5 million gallons per day AWT plant, 167,000 feet of new sewer pipeline, an emergency diversion forcemain, and four new pump stations.

Estimated Eligible Project Costs: \$94,600,000

EPA Grant: \$ 6,973,600

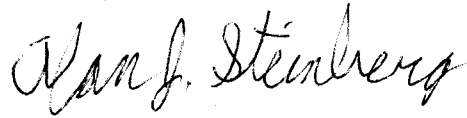
Our environmental review of this project indicates that no significant adverse environmental impacts will result from the proposed action. Consequently, we have made a decision not to prepare an EIS on the project. This decision is based on a careful review of the project's environmental information document and other supporting information. All of these documents, along with the Environmental Assessment (copy enclosed), are on file at the offices of the EPA Region 2 in New York, New York and the Rockland County Sewer District No. 1 in Orangeburg, New York, where they are available for public scrutiny upon request.

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Comments supporting or disagreeing with this decision may be submitted to EPA for consideration. All comments must be received within 30 calendar days of the date of this finding of no significant impact (FNSI). Please address your comments to: Grace Musumeci, Chief, Environmental Review Section, at the above address. No administrative action will be taken on the project for at least 30 calendar days after the date of this FNSI.

Sincerely,

A handwritten signature in cursive script that reads "Alan J. Steinberg".

Alan J. Steinberg
Regional Administrator

Enclosure

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Environ

Environmental Assessment

November 2005

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ENVIRONMENTAL ASSESSMENT

I. Project Identification

Western Ramapo Sewer Extension and
Advanced Wastewater Treatment Plant

Name and Address of
Applicant:

Rockland County Sewer District No. 1
4 Route 340
Orangeburg, NY 10962

EPA Project Numbers:

XP982265-01-0, XP982785-01-0, XP972887-01-0, and
XP972743-05

Project Location:

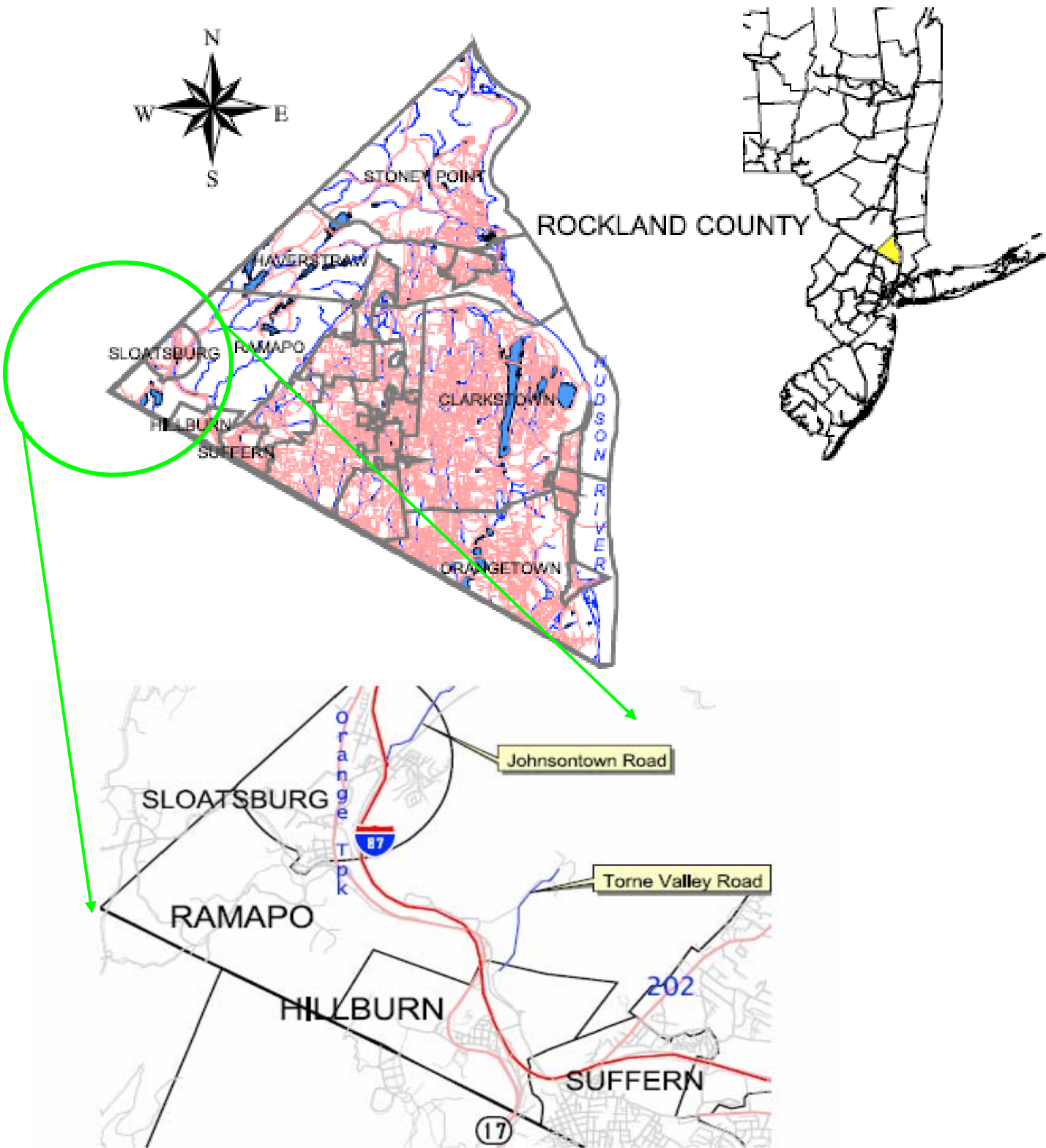
Villages of Hillburn and Sloatsburg and a Portion of
Unincorporated Town of Ramapo

II. Description of Planning Area and Existing Environment

- A. General. The Western Ramapo planning area is located along the Ramapo River in western Rockland County, New York, and is within the northern reaches of the Passaic River Basin. The planning area includes the Village of Sloatsburg (Sloatsburg), the Village of Hillburn (Hillburn), and a portion of the Unincorporated Town of Ramapo (Ramapo). Within Ramapo, the planning area is limited to the areas along New York State (NYS) Route 17, Torne Valley Road, and Johnstontown Road. (Figure 1)
- B. Existing Land Use and Zoning. The topography of the project area consists of a river valley with very steep slopes. Development has occurred primarily in the valley because the severe nature of slopes present in Hillburn and Ramapo has generally limited development outside the valley. A combination of open-space/parks and several large vacant or undeveloped properties are located west of the US Route 202 corridor in Western Ramapo. To the north of the planning area is the 52,000 acre Harriman State Park. Currently, the project area is zoned primarily for residential and commercial development.
- C. Groundwater. The 26 square mile Ramapo River Basin Aquifer is a federally designated sole source aquifer, under Section 1424(e) of the Safe Drinking Water Act (SDWA). The New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health designated this aquifer as a "Primary Water Supply Aquifer." Its groundwater is used to supply potable water to over 250,000 people in Rockland County, New York and approximately 65,000 people in northern New Jersey. Groundwater movement throughout the area is southerly towards the Passaic River. Varying seasonally from 4 to 12 feet below the surface, the groundwater table is considered high.

Pollutants in runoff from wet weather events, untreated wastewater from failed subsurface disposal systems, and chemicals (paint thinner, degreasers, etc.) disposed into subsurface systems are sources of potential aquifer contamination. The porous nature of the soils allows for contaminated surface water to contaminate the aquifer as well.

Figure 1: Rockland County and Project Area



- D. Surface Water. The Ramapo River Basin covers an area of 163 square miles and is part of the Passaic River Basin. Flowing from northern Orange County through the project area to New Jersey, the mean annual flow for the Ramapo River is 142 million gallons per day (mgd) at Suffern, New York and 191 mgd at Mahwah, New Jersey. Surface water from the Ramapo River is not used for potable water within the project area; however, over 2 million people in northern New Jersey depend on surface water that is pumped from the river to New Jersey's Wanaque Reservoir for storage and supply.

Beginning at a dam near the New York State (NYS) Thruway overpass and ending at the New Jersey border, the Ramapo River is designated as a NYSDEC Class A fresh surface water source. The Class A designation protects the surface water for uses including drinking and cooking. The New Jersey Department of Environmental Protection (NJDEP) assigned the surface water classification of FW2-NT to protect the river as a potable water supply for public use after conventional filtration. The FW2-NT classification applies to non-Outstanding National Resource Waters, which are not suitable for trout, but may be suitable for many other fish species.

In accordance with Section 303(d) of the Clean Water Act (CWA), NJDEP reported that sections of Ramapo River in Mahwah are impaired due to elevated levels of fecal coliform and phosphorous. There are several point source discharges into the river from secondary level wastewater treatment plants and facilities. The NYS Thruway Authority, Lincoln Street, and Mt. Fuji Restaurant wastewater treatment plants discharge a total of 1.05 mgd to the river within the project area. Within the project area, nearly all residences are connected to subsurface disposal systems and RCDOH estimates that 30 subsurface disposal systems fail annually, which equates to roughly one percent annual failure rate. RCDOH has reported elevated fecal coliform levels in Ramapo River and brooks tributary to the river that are most likely a result of failures of the treatment facilities and/or subsurface disposal systems. Stormwater runoff (non-point source discharge) from roadways, rooftops, and other impervious surfaces contribute polluted water to a network of swales, drainage ditches, conduits, streams and natural water courses that are tributary to the Ramapo River.

- E. Wellfield. United Water Resources, a private company, is the major drinking water purveyor in the project area. Its subsidiary, United Water New York (UWNY), provides drinking water to Rockland County customers. Another subsidiary, United Water New Jersey (UWNJ), provides drinking water to northern New Jersey customers.

This wellfield is situated in a designated Wellhead Protection Area under the NYS Wellhead Protection Program (WHP) administered by the NYSDEC and managed by the NYSDOH (Figure 2). The WHP was designed to protect drinking water supply wells from potential groundwater contamination under the 1986 Amendments of the SDWA.

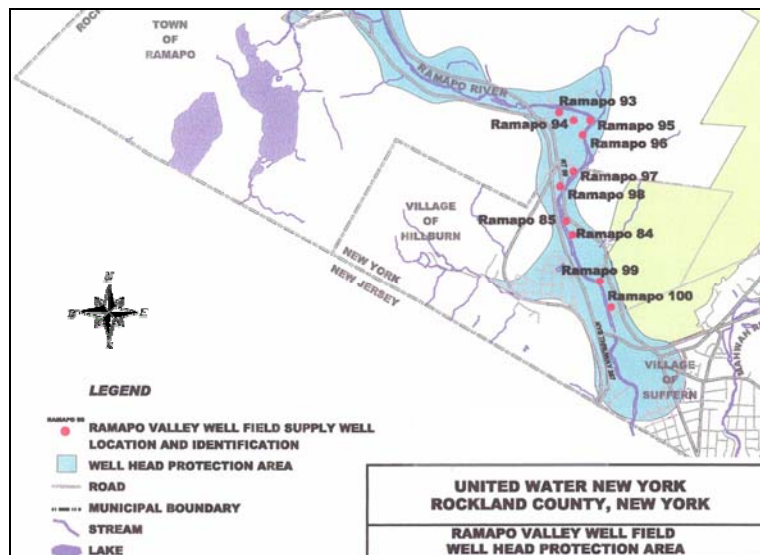


Figure 2: Wellhead Protection Area

Except during low river flow conditions, UWNY is permitted a total daily withdrawal of up to 14 mgd, and no more than a monthly average of 10 mgd. If the flow at the regulatory weir, managed by the U.S. Geological Survey, drops below 14 mgd, UWNY must reduce or cease pumping to maintain a minimum river flow of 8 mgd over the weir. The average wellfield pumping rate from 1997 to 2002 was approximately 6.04 mgd.

There are two ways that UWNY can augment river flows to continue pumping groundwater from the wellfield during low river flows. Groundwater pumped from the aquifer can be discharged back into the river and controlled water releases can be initiated from Potake Pond or the Harriman State Park lakes, such as Sebago and Welch. Historically, low flows in Ramapo River due to severe drought conditions have resulted in shutting down the wellfield approximately 10 percent of the time.

- F. Aquifer and River Relationship. The highly permeable sand and gravel deposits within the aquifer allow surface water from the river to recharge the groundwater supply through natural and induced seepage. Natural seepage from the river during flood stages is the primary source of recharge. Induced seepage, created by pumping the wellfield at or near full capacity, pulls up to 60 percent of the surface water downward from the river during normal river flows. However, as pumps are taken off-line or wellfield output reduced towards the point where no pumps operate due to low river flows occurring over longer drought periods, the aquifer recharge concept diminishes to the point where there is no exchange of water between the river and aquifer. The complex interaction between the river and aquifer is illustrated in Table 1, which describes the direction the water flows based on the river's flow rate and available head in relation to the river's bed or bottom.

Table 1 - Relationship between Aquifer and River

| | Groundwater level is higher than river's bottom | Groundwater level is lower than river's bottom |
|--|---|--|
| Medium to high river flows – high head | <i>No net exchange of water between aquifer and river</i> | <i>River recharges the aquifer</i> |
| Low to no river flows – low head | <i>Groundwater recharges the river</i> | <i>No interaction</i> |

- G. Transportation and Traffic. The project area is traversed by three major highway arteries, the NYS Thruway and Routes 59 and 17. With its high vehicular capacity, the Thruway is a limited-access, 8-lane divided Interstate Highway (I-87) with four lanes in each direction. It is used as the main transportation thoroughfare route within the project area with access from Interchange 15 (I-287 and I-87) and Interchange 15A (Routes 17 and 59, Hillburn). The area is also served by the Metro-North Port Jervis Line with commuter rail stations at Suffern and Sloatsburg.

Routes 59 and 17 run through Hillburn then merge just south of Torne Brook Road. Route 59 is a 2-lane arterial with one lane in each direction running east-west and parallel with the Thruway through Hillburn. A major portion of the light industrial and commercial activity is along Routes 59 and 17 in Hillburn. Primarily due to high industrial and commercial activity and access from Route 59 to the Thruway, Route 59 experiences traffic congestion and ranks third in highest level of traffic volume of all roads in Hillburn during the weekday and weekend peak hours. Route 17 (Orange Turnpike) is a 4-lane undivided arterial highway except from north of the NYS Thruway to the Sloatsburg border where it is divided with two lanes in each direction and runs in a north/south direction including Ramapo to New Jersey. Within the project area, Route 17 is primarily used as a major automobile artery connecting Sloatsburg and Hillburn with the Thruway. Route 17 access to the NYS Thruway also experiences congestion during the weekday and weekend morning and evening peak hours.

- H. Air. EPA designated the air quality in Rockland County as non-attainment for the eight-hour ground-level ozone standard with a “moderate” classification. The Clean Air Act (CAA) requires that Rockland County, in collaboration with NYSDEC, implement plans describing efforts to control and/or reduce the ground-level ozone to meet the standard by the 2010 regulatory date. NYSDEC has until 2007 to submit this plan to the EPA.

EPA designated Rockland County as part of the New York City Metropolitan Area (NYCMA) as non-attainment for fine particulate matter, PM-2.5. New York State will also need to submit plans by 2008 to provide attainment of the PM-2.5 standard by 2010.

According to RCSD No. 1's 1997 Draft Environmental Impact Statement (DEIS) for the Western Ramapo Wastewater Treatment Plant and Modifications to Sanitary Sewer, air quality characteristics in the Rockland County area are predominantly influenced by mobile source emissions from vehicles traveling on the Thruway and Route 17.

- I. Population and Demographics. As indicated in the 1997 DEIS, population projections were based on development within the planning area to full build-out that would occur in 20 years or so utilizing current zoning ordinances, proposed development, and available land,

excluding construction in environmentally sensitive areas (ESAs). The projected residential population at full build-out was estimated for Sloatsburg, Hillburn and Ramapo at 9,202 persons, almost double the current population based on the 2000 U.S. Census. The population projections at full build-out for commercial and light industrial zoned areas, based on equivalent current and anticipated floor space, is 11,602 employees, which also almost doubles the current level. Therefore, the total residential, commercial, and light industrial population at full build-out is projected to be 20,804 persons. However, such projections will vary if zoning ordinances are revised during build out. For example, current commercial properties might be rezoned to multi-family residential thus further increasing the population in the area.

- J. Environmentally Sensitive Areas. ESAs exist within the planning area. These ESAs include: federally designated wellhead protection area, federally designated floodplains; state and federally designated wetlands; state designated wild, scenic and recreational corridors; and habitat for threatened or endangered species (i.e., timber rattlesnakes).
- K. Cultural Resources. The project area has been disturbed in many locations by the construction of roads and 20th century development. Based on several Cultural Resource Surveys (CRS) performed for various assessment stages of this proposed project, cultural resources within the project area are limited.

III. Purpose and Need for Project

The purpose of this project is to provide protection of the surface water and groundwater resources in the project area and to further augment river flows during dry periods to reduce the restrictions on the usage of UWNYS's wellfield. Existing wastewater treatment within Hillburn, Sloatsburg, and Ramapo consists of individual subsurface disposal systems and three small secondary wastewater treatment plants (NYS Thruway Authority, Lincoln Street, and Mt. Fuji Restaurant). Due to the combination of high groundwater table and bedrock, age of on-site treatment systems, and density of housing, there are several zones within the project area where the subsurface disposal systems are failing or have failed. Furthermore, Mt. Fuji Restaurant wastewater treatment plant is currently operating without a State Pollutant Discharge Elimination System (SPDES) permit because it predates the New York State program, and Lincoln Street wastewater treatment plant renewed its SPDES permit. Both wastewater treatment plants only provide secondary level wastewater treatment resulting in effluent being discharged into Ramapo River that is below current water quality standards. Construction of this project will allow homes and businesses to discontinue reliance on subsurface disposal and substandard treatment facilities. By removing subsurface disposal systems from service and improving the level of wastewater treatment, implementing this project will allow Rockland County and northern New Jersey water users to continue to rely on groundwater as their potable water source.

IV. Detailed Description of Selected Plan

The selected alternative is to extend sewers to Hillburn, Sloatsburg, and a very small portion of Ramapo to collect wastewater. This wastewater, combined with that from three small secondary wastewater treatment plants will be conveyed to a new advanced wastewater treatment (AWT) plant with discharge to the Ramapo River. A majority of the low-pressure sewer lines will be placed in Sloatsburg with a proposed pump station in Sloatsburg and another in Hillburn and two

in Ramapo. The AWT plant will be located in Hillburn, adjacent to Route 17 and Interstate 287. The NYS Thruway Authority and NYS Department of Transportation (NYSDOT), Algonquin Gas Transmission Company, and private entities presently own portions of the AWT plant site. RCSD No. 1 will acquire these properties.

The construction project will consist of a 1.5 mgd AWT plant, 167,000 feet of new sewer pipelines, an emergency diversion forcemain, and four new pump stations (Figure 3). This will be sufficient for the Western Ramapo planning area through full build-out. Table 2 breaks down the current and maximum monthly wastewater flows for the project area. The maximum monthly flows are estimated utilizing current zoning for full build-out.

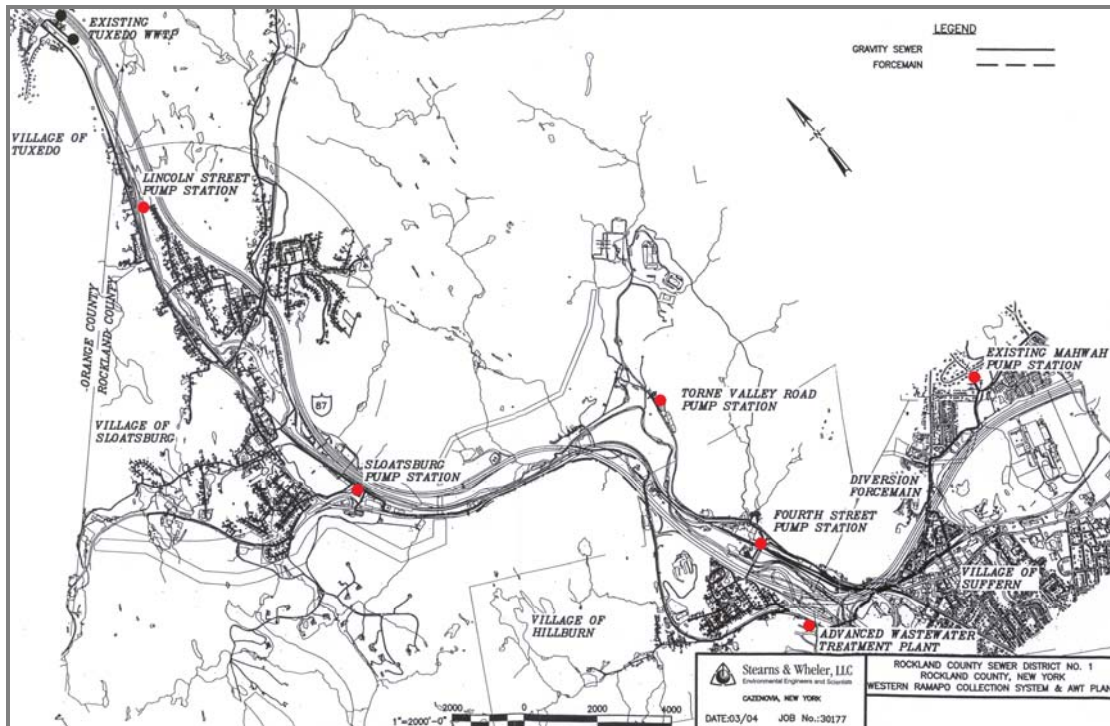


Figure 3 – Project Area Map (Source: RCSD No. 1, March 2004)

Table 2 – Current and Projected Wastewater Flows

| | Current Flows (mgd) | Maximum Monthly Flows (mgd) |
|--|---------------------|-----------------------------|
| Residential | 0.46 | 0.91 |
| Commercial | 0.04 | 0.05 |
| Industrial | 0.09 | 0.21 |
| Wastewater treatment plants to be abandoned: | | |
| NYS Thruway | 0.045 | 0.13 |
| Lincoln Park | 0.01 | 0.03 |
| Mt. Fuji Restaurant | 0.05 | 0.05 |
| Ramapo Landfill ⁽¹⁾ | 0.055 to 0.10 | 0.10 |
| Total | 0.8 | 1.5 |

(1) Leachate collected from the Ramapo Landfill is currently being conveyed to RCSD No. 1's Orangeburg plant for treatment, where its effluent discharges to the Hudson River. Before leachate was conveyed to the Orangeburg plant, the Suffern plant used to accept approximately 100,000 gpd of leachate in November 1995.

The AWT plant will have tertiary treatment technology to achieve high quality effluent, utilizing the following process equipment: headworks, grit chambers, primary settling tanks, activated sludge basins, final settling tanks, cloth and membrane filtration system, disinfection, and post aeration (Figure 4). An odor control system consisting of packed bed scrubbers followed by activated carbon adsorbers will capture and treat odorous compounds from process equipment at the AWT plant. The effluent levels from the AWT plant will meet the limits imposed by the New York City Department of Environmental Protection (NYCDEP) for discharges into the New York City Watershed and will not exceed the SPDES permit limits. All process units will be designed to pass peak hourly flows of 4.5 mgd with one unit out of service. The selected AWT system technologies will achieve the effluent water quality listed in the NYSDEC Notice of Issuance (NOI) SPDES permit limits.

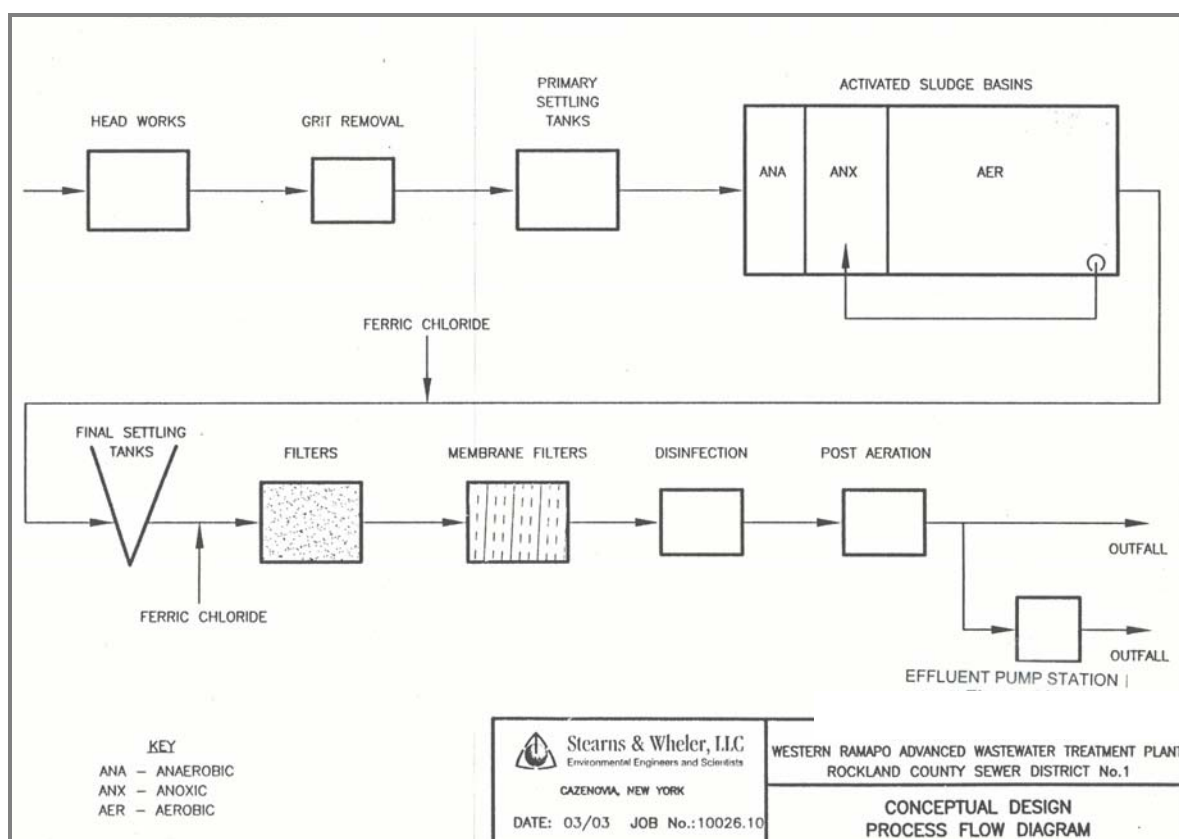


Figure 4 – Process Flow Diagram (Source: RCSD No. 1, March 2003)

The solids handling system will consist of gravity thickeners to accept sludge from the primary settling tanks, which then will transfer sludge to the storage tanks. Sludge from the storage tanks will be transferred to the centrifuges inside the sludge handling facility for dewatering. Dewatered sludge will then be hauled by truck to the Rockland County Solid Waste Authority's sludge composting facility in Hillburn to be composted.

The collection system will be sized to handle current wastewater flows plus additional flow from growth that may occur within the project area over the next 50 years. Standard industry practice is to design for 50-year life expectancy to prevent premature replacement of the pipes and adjacent

infrastructure such as roadways. Table 3 lists the flows for major collection system components. The influent sewer line to the AWT plant will handle approximately 3 mgd for average daily wastewater flows and 12 mgd for peak hourly wastewater flows.

Table 3 - Collection System Flows

| System Component | Future Average Daily Design Flow (gpm) ⁽¹⁾ | Future Peak Hourly Design Flow (gpm) |
|---|---|--------------------------------------|
| Lincoln Street Pump Station ⁽²⁾ | 30 | 120 |
| Sloatsburg Pump Station | 1,800 | 7,200 |
| Torne Valley Road Pump Station ⁽²⁾ | 168 | 670 |
| Fourth Street Pump Station | 265 | 1,060 |
| AWT Plant Influent Sewer Line | 2,065 (~1.4 mgd) | 8,260 (~5.7 mgd) |

(1) gallons per minute (gpm).

(2) These flows are not additive; flow from the Lincoln Street Pump Station is pumped a second time by the Sloatsburg Pump Station. Also, the Torne Valley Road Pump Station flow is pumped for the second time by the Fourth Street Pump Station.

The AWT plant will discharge the highly treated effluent into the Ramapo River via two outfall locations (Figure 5). According to the NYSDEC NOI SPDES permit, effluent will be pumped to the main outfall upstream of the wellfield at all times, except that another outfall downstream of the wellfield may be used when the river flow at the regulating weir exceeds 15 mgd, or when emergency maintenance at the main outfall is required and RCSD No. 1 has received NYSDEC's approval. Discharging plant effluent at the main outfall upstream of the wellfield will augment river flows, prolong pumping of the wellfield to improve the yield to avoid water use restrictions, and aid in the recharge the aquifer. When the well pumping operations meet the water demand, and the aquifer does not need recharging, the AWT plant effluent may flow by gravity to the outfall location downstream of the wellfield.

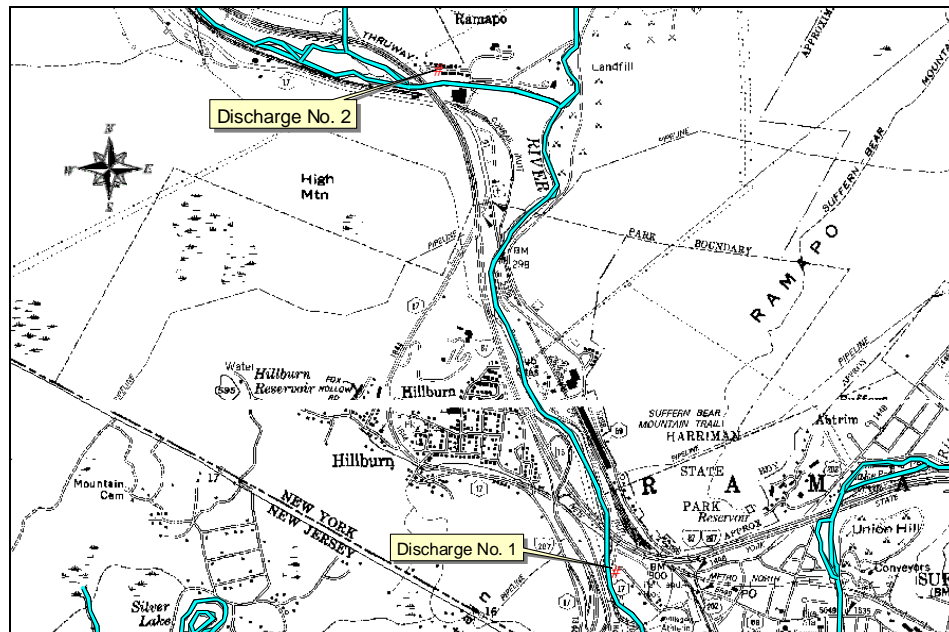


Figure 5 – Effluent Discharge Locations

A new diversion force main will be installed to allow a partial or total diversion of wastewater, per NYSDEC's approval, to the existing Orangeburg Wastewater Treatment Plant (Orangeburg), should it be necessary on a short-term emergency basis if the AWT plant experiences a catastrophic failure. This diversion forcemain consists of a new line from the AWT plant to the existing Mahwah pump station in Suffern and an existing line that conveys wastewater from the Mahwah pump station to the Orangeburg plant. In addition, an emergency generation system will be provided to power the entire AWT plant during power outages. The diversion forcemain will be sized to handle approximately 1.5 mgd (1,042 gpm) for average daily flows and 4.5 mgd (3,125 gpm) for peak hourly flows.

V. Projected Project Costs

Table 4 provides detailed project costs information.

Table 4 – Detailed Project Costs

| | |
|---|--|
| Total Project Costs | \$94,600,000 |
| EPA Grant-Eligible Cost | \$94,600,000 |
| Actual EPA Grant Amount (Combined) | \$6,973,600 (9/00, 9/02, 10/04 & 9/05) |
| Other Federal/State Grants and Loans: | |
| Federal (HUD) ⁽¹⁾ | \$858,108 (10/18/01) |
| State Revolving Loan Fund | \$81,056,922 |
| Municipal Bonding of Project Cost | \$600,000 |
| Existing 2004 Yearly Per-Household User Charge | \$251 |
| Current 2005 Yearly Per-Household User Charge | \$306 |
| Estimated 2006 Yearly Per-Household User Charge | \$351 |
| Annual Project Related User Charge Increase Per-Household | \$50 |
| Range of Median Family Income in Service Area | \$54,625 (Hillburn), \$70,721 (Sloatsburg) & \$77,795 (Ramapo) |
| Local Income/Poverty Income in Service Area | Less than \$10,000 |

(1) Completed NEPA review on collection system.

VI. Evaluation of Alternatives

The following alternatives were evaluated: No Action, Orangeburg Plant, Upgrade Suffern Plant, Construct a New AWT Plant. Some of these alternatives contain sub-alternatives for particular aspects of the project.

A. No Action Alternative

Under the No Action alternative continued use of the existing collection and treatment technologies in the service area (subsurface disposal systems and outdated secondary treatment plants) that are inadequate and/or failing would potentially contaminate the aquifer, which supplies drinking water to over one million people, as well as the entire Ramapo River watershed. Secondly, during severe drought conditions, UWNYS's wellfield will continue to be placed under pumping operation restrictions to maintain regulatory river flows to New Jersey, resulting in water use restrictions for Rockland County residences.

B. Orangeburg Plant Two variations were considered.

1. **Orangeburg Plant with discharge to Hudson River:** Wastewater collected from the project area would be conveyed to the existing Orangeburg plant, which has sufficient capacity, for treatment and discharge into the Hudson River. This represents an out-of-basin transfer of water which was evaluated and rejected because it would negatively impact the environment and drinking water supply by significantly reducing the amount of water available in the river and aquifer. During droughts, the demand for drinking water surpasses the river's flow to New Jersey and groundwater pumping from the wellfield must either be limited or cease.

NYSDEC has indicated that it will not allow an out-of-basin transfer because of the potential impact it would have on water supply. The only case where this practice will be allowed by NYSDEC is if there is a catastrophic plant failure at the AWT plant and wastewater needs to be diverted to the Orangeburg plant to prevent untreated wastewater from contaminating the river and aquifer.

2. **Orangeburg Plant with discharge to Ramapo River:** RCSD No. 1 considered an alternative utilizing the existing Orangeburg plant and keeping the water in-basin. The wastewater collected from Western Ramapo would be treated at the Orangeburg plant and the effluent would be returned to the Ramapo River. To recharge the aquifer, the amount of effluent to the Ramapo River would be greater than the amount of wastewater collected. This option requires upgrading 20-miles of interceptors and two existing pumping stations, constructing six new pumping stations (two for wastewater influent and four for wastewater effluent), and constructing the entire return effluent line from the plant to the discharge locations. In addition, a portion of the Orangeburg plant would need to be significantly upgraded to tertiary level to meet the SPDES effluent limits. Considering all fiscal, legal, engineering, and land acquisition fees, the cost associated with this alternative is similar to the cost of constructing a new AWT plant. This alternative was rejected because UWNYS determined that there are more cost effective ways to recharge the aquifer. In addition, there are numerous environmental impacts associated with the construction of pipelines and pumping stations, and the land acquisitions are extensive and complicated.

C. Upgrade Suffern Plant

RCSD No. 1 considered purchasing and upgrading the wastewater treatment plant in the Village of Suffern (Suffern) located within the Ramapo River Basin. This alternative was rejected because preliminary estimates indicated that it costs significantly less to construct a new AWT plant with a tertiary treatment system than to upgrade Suffern's wastewater treatment plant to the same tertiary treatment standards. Secondly, Suffern declined to participate in the joint project. Lastly, there is limited space available for expansion of the Suffern plant and there were potential impacts to ESAs, such as floodplains and wetlands that were unacceptable.

D. AWT Plant (Selected Alternative)

The selected alternative is to collect and convey the wastewater from the Western Ramapo service area to one new central AWT plant. This alternative was selected over the other alternatives for five main reasons: 1) the AWT plant will provide the high level of treatment necessary to recharge the aquifer and augment flows in the Ramapo River; 2) this project minimizes adverse environmental effects compared with other alternatives; 3) by not pumping water out-of-basin, this alternative creates no hardship for downstream water users; 4) a new AWT plant will actually improve the quality of water in the Ramapo River; and 5) this project is more cost competitive than the other alternatives presented.

Sub-alternatives or variations for: siting, capacity, treatment technologies, and outfall discharge locations for the AWT were considered.

- 1. Siting:** During the final AWT plant location selection process, three sites within the Ramapo River Basin project area were evaluated.
 - a. The Lane Realty Corporation property was rejected because of its relatively high capital and annual operation/maintenance costs for the AWT plant.
 - b. An abandoned sand and gravel property site offered the lowest cost impacts; however, it was eliminated because of potential impacts to rare and endangered species and due to the presence of archaeological features.
 - c. The **abandoned Thruway property along Route 17 (selected)** offers minimal environmental and costs impacts, a viable location, suitability for construction, and no environmental justice concerns. The site, located in Hillburn where a rock hillside was previously blasted and cleared during a highway construction project, is approximately ½-mile long and is parallel to I-87 and adjacent to the I-287 on-ramp. The sparsely vegetated site is covered with bedrock outcroppings and gravel. The NYS Thruway Authority, NYSDOT, Algonquin Gas Transmission Company, and private owners presently own portions of the project site. RCSD No. 1 will have to acquire these properties for construction of the AWT plant.
- 2. Capacity:** A 1.5 mgd and a 5.0 mgd plant were considered.
 - a. The **1.5 mgd capacity (selected)** of the new AWT plant was based on flows contributed by various entities willing to participate in the project. The participation of independent entities is beyond RCSD No. 1's control. A capacity of 1.5 mgd provides service within Sloatsburg and Hillburn, and Ramapo.
 - b. A 5.0 mgd capacity plant would have taken additional wastewater from the selected service areas and from the Town of Tuxedo, Palisades Interstate Park, and a portion of Ramapo already serviced by RCSD No. 1. These entities chose not to participate in the project, negating the need for extra capacity.

3. **Treatment Technologies:** Different treatment technologies were considered for each of the three main components (i.e., pretreatment, secondary, and advanced tertiary) of the treatment train, comparing operation, performance, and cost.

Pretreatment: Headworks for coarse screenings removal, aerated grit chambers for grit removal, primary settling tanks for removal of suspended solids and organic matter, fine screens for fine screenings removal, and equalization basins for flow balancing were evaluated. Due to unnecessary operational costs and a large footprint, the fine screenings and equalization basins were eliminated. The **headworks, grit chambers and primary settling tanks** will be used for the pretreatment system.

Secondary Treatment: Five different biological nutrient removal technologies were considered: extended aeration basins, activated sludge basins, sequencing batch reactors, membrane bioreactors, and moving bed bioreactors. Extended aeration basins were eliminated because of high energy usage and operational complexity; sequencing batch reactors were rejected due to heavy reliance on instrumentation/control and the inclusion of large downstream equalization basins; membrane bioreactors were discarded because of high sludge production; and moving bed bioreactors were eliminated due to the lack of demonstrated performance in the U.S., the need for phosphorus, and the possibility of foaming in the bioreactor. The selected biological nutrient removal system technology will consist of **conventional activated sludge basins with anaerobic/anoxic/aerobic tank configuration and activated sludge return** for biological phosphorus removal. This technology will achieve the required nitrification/denitrification process for the removal of ammonia and nitrogen from the wastewater. The selected components for the secondary treatment system include activated sludge basins **followed by final settling tanks**, which are used for final sedimentation of wastewater prior to filtration.

Tertiary Treatment: The components selected are **cloth and membrane filtration** systems for removal of phosphorus, cysts, and viruses; **disinfection** for destruction of remaining bacteria, microorganisms, and viruses; and **post aeration** for increasing the dissolved oxygen content. Disinfection alternatives evaluated for the AWT plant include: chlorine gas for chlorination followed by sulfur dioxide gas for dechlorination, ultraviolet (UV) disinfection, and liquid sodium hypochlorite for chlorination with sodium bisulfite for dechlorination. Chlorine gas with an option of using sulfur dioxide gas for dechlorination was rejected due to health and safety concerns. UV disinfection uses high intensity ultraviolet lamps submerged in the effluent to inactivate pathogens by damaging their DNA. UV disinfection is a physical process that does not require the use of any chemicals; however, has a high annual operation and maintenance costs. Wastewater disinfection using **sodium hypochlorite/bisulfite** is the selected disinfection alternative to provide the appropriate level of disinfection to protect water quality for downstream users. In a contact basin, liquid sodium hypochlorite mixes and reacts with wastewater to kill pathogens, similar to chlorine gas. Since chlorine residual must be maintained in the wastewater effluent, dechlorination is required because chlorinated effluent can harm aquatic organisms in the river. To minimize this harm, sodium bisulfate will be added to dechlorinate the wastewater prior to final discharge.

- 4. Outfall Discharge Locations:** Several outfall locations were evaluated for discharging the AWT plant effluent to the Ramapo River.
- a. The alternative to discharge the AWT plant effluent into wetlands was considered, but rejected because of the large area of wetlands that would be needed and the lack of feasibility given the local topography and potential impacts to ESAs.
 - b. The alternative to discharge effluent to the Ramapo River at a location downstream of the regulatory weir was considered, but rejected based on legal constraints. Discharge below the regulating weir would not allow for an accounting of discharge flow as required by UWNYS withdrawal agreements. In addition, a discharge further downstream of the wellfield would not allow for the recharge of the aquifer and augmentation of river flows.
 - c. The alternative to place a single discharge point immediately upstream of the regulatory weir in Ramapo River was considered, but rejected because it would not allow for recharging the aquifer and/or augmenting the river flows to prolong pumping operations by the UWNYS wells.
 - d. The alternative to place a single discharge point upstream of the UWNYS wells was considered, but rejected because it would cost more for constant pumping of treated wastewater effluent upstream even during times when recharge of the wellfield was not needed. When the river flow is high or when the aquifer is pushing water upwards to the river, additional water for recharge is not necessary.
 - e. Installation of two discharge points (the selected sub-alternative) was considered. Based on a survey of a segment along the river in the vicinity of the proposed AWT plant, four potential sites were evaluated using the Stream Habitat Visual Assessment (SHVA). Two upstream discharge outfall sites, one located just downstream of the Fourth Street Bridge in Hillburn and the other located at the regulating weir were rejected because of overall poor SHVA ratings. The first selected outfall (discharge location #1) will be located approximately 800 feet downstream of the AWT plant, where the discharge effluent may flow by gravity into Ramapo River, and just upstream of the regulating weir. This outfall may be used when river flows exceed 15 mgd and the aquifer does not need recharging. The second selected outfall (discharge location #2) will be located 10,000 feet upstream of the AWT plant where the effluent will be pumped into Ramapo River upstream of the wellfield. The United Water Management & Services recommended outfall location #2 to provide a buffer area so that the effluent maintains adequate retention time in the river before reaching the wellfield.
- 5. Collection System:** The type, material, and location/routing of the collection system were evaluated.
- a. Type: Gravity sewers were found to be the most cost effective method for wastewater conveyance except where: depths are greater than 12-feet, rock removal is greater than 5-feet, or severe constraints (i.e., wetlands, steep hilly topography, parkland, existing underground utilities, and maintenance of traffic flow) exist. In these instances, low-

pressure sewers with grinder pumps can be more cost effective than deep trench piping because smaller lines and less depth of cover require less excavation. Based on value engineering, **a combination of gravity and low-pressure sewers and pumping stations with force mains (selected sub-alternative)** were incorporated into the project.

- b. **Material:** Several piping materials for gravity sewers such as ductile iron, concrete, vitrified clay, reinforced plastic mortar, high density polyethylene, and standard polyvinyl chloride (PVC) were evaluated. **PVC (selected sub-alternative)** gravity sewers will be used because they are most cost effective.
- c. **Location/Routing:** **Force main routing along the shoulder of Route 17 (selected sub-alternative)** and a route where a pump station on Eagle Valley Road would pump the sewage easterly to a terminal manhole located near the Thruway Rest area were considered. Using the second route, the sewage would have to be conveyed by gravity main to a second pumping station located off of Torne Valley Road. The costs would be three times higher than the Route 17 main, due to deep cuts and substantial bedrock removal required for the gravity main installation.

VII. Environmental Consequences/Evaluation of Impacts of the Selected Plan

- A. **Surface Water and Groundwater Quality.** Overall, this project will have a positive effect on the surface water and groundwater quality in the project area. First, the elimination of failed or failing subsurface disposal systems will remove a potential source of contamination. Second, the effluent from the new AWT plant will be of better water quality than the discharge from the three secondary-level wastewater treatment plants and will meet or exceed the NYSDEC SPDES permit limits (Table 5).

Table 5 – AWT Plant Effluent Quality and NYSDEC SPDES Limits

| Parameter | AWTP Effluent Quality | NYSDEC SPDES Limits⁽¹⁾ |
|--|------------------------------|--|
| BOD ₅ , mg/L | <5 | Monitor |
| TSS, mg/L | <5 | 15 |
| Settleable Solids, mL/L | 0.1 | 0.1 |
| Nitrogen (as NH ₃), mg/L (06/1 – 10/31) | <1 | 2.8 |
| Nitrogen (as NH ₃), mg/L (11/1 – 05/31) | <1 | 7.6 |
| Total Phosphorus, mg/L | 0.2 | 0.2 |
| Dissolved Oxygen, mg/L | 7.0 | 7.0 |
| Fecal Coliforms, No./100mL ⁽²⁾ | 200 | 200 |
| Total Residual Chlorine, mg/L | 0.1 | 0.1 |
| Giardia Cysts | 99.9% removal | No requirement ⁽³⁾ |
| Enteric Viruses | 99.99% removal | No requirement ⁽⁴⁾ |

(1) NYSDEC SPDES Permit - Notice of Permit Issuance (NY – 0270598) dated October 27, 2004. (2) 30-day geometric mean. (3) EPA drinking water standard requires 99.9 percent removal for Giardia Cysts. (4) EPA drinking water standard requires 99.99 percent removal for Enteric Viruses.

During construction, there is the potential for short-term direct impacts to surface water and groundwater quality from stormwater runoff during excavation activities and from dewatering of sediments that may be required due to the high water table. Stormwater runoff from wet weather events can carry soil, stock-piled material, and contaminants away from construction sites. Contaminants include pesticides, petroleum products, construction chemicals, solvents, asphalts, and acids. In addition to potential contamination, the volume of stormwater runoff can overwhelm inadequate drainage facilities causing flooding.

Located one mile northwest of Hillburn, the Ramapo Landfill is on the National Priorities List and is currently being addressed by a single long-term remedy focusing on the entire site. Leachate from the inactive 50-acre Landfill is collected, extracted via wells, and then conveyed to the Orangeburg plant for treatment with discharge to the Hudson River, which is a non-potable water source. The leachate includes many wastewater pollutants deriving from industrial sludges and wastes, sewage sludges, municipal solid waste, asbestos, construction and demolition debris, yard debris, paint sludge, and illegal wastes. To date, the treated wastewater effluent with the leachate component that is being discharged to the Hudson River from the Orangeburg plant has not violated the plant's SPDES permit conditions. Moreover, EPA conducted a review in December 2004 and found that the remedy is functioning as intended. Under this project, the leachate from the capped Landfill will be conveyed to the new AWT plant and its effluent will be discharged to Ramapo River. The existing Ramapo pump station that is used to transfer the leachate from the landfill to the Orangeburg plant is aging and needs upgrades. Ramapo will be abandoning this pump station and the leachate will be rerouted and flow by gravity from the Landfill to the new pump station servicing the Torne Valley Road area, which then will pump the combined wastewater and leachate to the AWT plant. Whereas the new plant will make use of wastewater treatment systems more advanced than the Orangeburg plant, the leachate component of the AWT plant effluent is not expected to pose a significant impact.

If sewer connections are made on a first come first served basis, there is the possibility that existing homeowners, with failing subsurface systems who may not have the sewer hook up fees readily available, will not be able to connect to the system because the AWT plant will reach capacity. In such a case, a threat would still be posed to surface water and groundwater quality and the purpose of the project will not have been met.

- B. Surface Water and Groundwater Quantity. When river flows fall below 14 mgd, pumping is reduced or water is pumped into the river from other sources to maintain the agreed upon flow over the regulatory weir to New Jersey. For example, during the recent 2002 drought, pumping operations ceased when river flows dropped below the regulatory weir limit of 8 mgd. During the summer of 1995, the river flows were augmented every day by releases from Potake Pond, except in September when the river flow was so low that all operation of the well pumps was restricted for most of the month.

Modeling was conducted to determine whether augmenting river flows with the AWT plant discharge would allow for prolonged pumping of the wells during drought conditions.

Based on historic river flow data from 1979 to 2003, with the 1.5 mgd AWT plant discharge, the total flow over the regulatory weir to New Jersey would have increased by an annual average of 0.8 mgd; the average increases during June, July, and August would have exceeded 1.0 mgd. The average number of days per year that UWNY would have had to shut down its drinking water supply wells would have decreased from 35 (the actual number of shutdowns that occurred during that period) to 21 (note that during severe drought conditions, dry weather flows and water use restrictions will reduce the 1.5 mgd discharge estimate to approximately 1.0 mgd, so the number of days the well pumps would have shutdown would have been slightly higher). Augmenting Ramapo River flows associated with an in-basin discharge will improve drinking water availability up to a certain level to both Rockland County and downstream New Jersey users based on the current withdrawal rate from the wellfield.

- C. Vegetation and Wildlife. There will be minimal impact on vegetation from construction activities, which includes clearing, grubbing and excavating. A majority of the construction work to be performed during the installation of the collection system involves disturbance of paved roads within current rights-of-way. Trees and bedrock outcroppings on the hillside slope portion of the site where the AWT plant will be constructed will be removed. The amount removed is contingent upon the final layout of the plant, but the total loss of trees will not be significant and no more than 400,000 cubic yards of bedrock will be removed. The pumping stations will be constructed in developed areas, where native vegetation has long since been cleared for streets, homes, and businesses.

There may be potential for a short-term impact on aquatic life in the river during construction of the AWT plant discharge outfalls.

- D. Endangered and Threatened Species. The U.S. Fish and Wildlife Service was consulted on this project and indicated that no federal endangered or threatened species are known to exist in the project area. There is a potential for a short-term impact on state threatened or endangered species (i.e., timber rattlesnakes) at some locations within the collection system. There are no significant wildlife habitats of rare or endangered species within the AWT plant site.

The normal movement range for timber rattlesnakes is up to 1 or 1.5 miles from their dens. NYSDEC will be contacted for identified areas of concern along the collection system route where impact minimization may be required. Actual timber rattlesnake movements from specific dens may not occur equally in all directions due to the location of suitable habitats and preferred migration corridors, presence of natural barriers to movement, and manmade barriers (NYS Thruway). Therefore, no impact minimization will be required where the NYS Thruway is located between the den and the project area, essentially eliminating potential timber rattlesnake encounters.

- E. Environmentally Sensitive Areas. Several ESAs exist within the collection system and AWT plant areas. These ESAs include: federally designated floodplains; state and federally designated wetlands; state designated wellhead protection areas; and wild, scenic, and recreational corridors.

The chosen project site for the AWT plant is not directly located in any ESAs. No permanent above-grade structures (i.e., pump stations) are currently planned for construction on or near any wetland areas in the project area. The wastewater diversion forcemain will be constructed in already disturbed roadways avoiding any ESAs.

However, below-grade sewer structures are currently planned for construction in or near federal and state wetland areas in the project area. Some minor disruptions may occur during the installation of sewers in stream and river crossings. The construction of the two proposed outfalls will temporarily disturb the Ramapo River bank at two locations. There are no long-term environmental impacts associated with this short-term work due to the bank disturbance being minor in nature.

There is potential for groundwater contamination of the wells situated in the Wellhead Protection Area, which are covered under the WHP program, from point (inadvertent AWT plant discharge) and non-point sources (stormwater run-off).

- F. Archeological and Historic Resources. The location, routing, and sites for the collection system and AWT plant within the project area were selected during design to effectively minimize impacts on all archaeological and historic resources present based on Stage 1A and 1B CRSs. The results of Stage 1A and 1B CRSs show that there are four potential rock shelters located outside of the AWT plant project limits. A supplemental Phase 1B CRS was conducted to determine whether the four possible rock shelters contained prehistoric and historic resources. The survey did not discover evidence suggesting the use of these locations as rockshelters in either historic or prehistoric settings. The construction of the AWT plant will have no effect on these resources. These resources are not eligible for nomination to the National Register of Historic Places. The New York State Historic Preservation Officer (SHPO) has determined that implementation of this project will have no effect on archaeological and historic resources.
- G. Population Growth Impacts/Secondary Impacts of Induced Growth. The Town of Ramapo Comprehensive Plan states that, although highly constrained by natural features, development in the relatively undeveloped Western Ramapo planning area may be most highly influenced by the expansion of central sewage disposal into the area. The population in the residential zoned areas is projected to grow by 2,638 persons or 86 percent for Sloatsburg, 577 persons for Hillburn or 63 percent, and 1,262 persons for Ramapo or 208 percent. This equates to 97 percent overall growth within the residential sector in the project area. For commercial and light industrial development, there will be a growth of 2,484 persons or 88 percent in Hillburn, 1,138 persons or 96 percent in Sloatsburg, and 2,070 persons or 109 percent in Ramapo. This equates to 96 percent overall growth within the commercial and light industrial sector in the project area.

This growth will lead to a higher demand for water from the aquifer for public use. Based on current zoning, an increase in water demand of approximately 453,000 gpd is expected at full build-out, of which 370,000 gpd (82 percent) is from residential use. Using current average well withdrawals in the area, this increase in population results in a less than four percent increase in withdrawals, such that no significant impacts to the wellfield are anticipated.

With the development planned in the Valley, there will be an increase in impervious surfaces (driveways, roadways, houses, commercial and industrial buildings, parking lots, etc.) that will contribute to additional stormwater and non-point source runoff from wet weather events. Additionally, stormwater runoff from residential and non-residential development construction activities associated with land disturbances will contribute to water quality impacts of nearby wetlands, rivers, streams, and water sources.

An anticipated doubling of the school age population to full build-out would necessitate the construction of new elementary schools and require the expansion of the existing Middle School and High School to accommodate the larger education population.

Based on the required demand for additional emergency and other support services, there will be a modest incremental cost for supplying the required support services for the increase in population at full build-out. The specifics of such services and facilities have not been determined; therefore, the particular environmental and cost impacts cannot be quantified.

- H. Socioeconomic. Homeowners and owners of commercial and light industrial facilities in the project area will have to pay for installation and connections for a sanitary sewer line on the property from the dwelling to the roadside curb stop, where RCSD No. 1 will make the connections to the sewer mains. The total cost of installing a waste line from the dwelling to the curb stop will vary depending on the distance and level of construction; however, the average cost range is approximately \$35 to \$45 per linear foot.

Upon implementation of the project, wastewater collection and treatment charges will cost the average local ratepayer approximately \$351 annually in 2006. Local ratepayers per household paid an annual fee of \$251 in 2004 and \$306 in 2005 for town related services. This equates to an annual increase of \$50 per household or \$100 more than the fees paid in 2004. The typical affordability standard is that ratepayers may be expected to pay one percent of the median household income (MHI) for wastewater treatment services. Applying this standard, \$508 per year is the maximum rate for wastewater collection, treatment, and disposal services that would be considered affordable in the project area. Therefore, the service charges associated with this project are within the affordability standards.

- I. Aesthetic. A majority of equipment associated with the collection system will be placed underground with the exception of the pumping stations. In addition, the public provided feedback on designs and architectural renderings of above ground pumping stations at the Public Information Meetings. Based on public input, pumping stations will consist of brick or stone structures surrounded by a fence or plantings for an aesthetically pleasing environment.

Upon completion of the AWT plant, the landscape will consist of several buildings and tanks rather than a rocky hillside with trees and vegetation present. RCSD No. 1 will ensure that the rocky hillside retains as much of its original shape and vegetation as possible; however, the AWT plant will be present in the foreground with high visibility from passengers traveling by in vehicles on the NYS Thruway.

- J. Odors. Hydrogen sulfide is the most common cause of odor problems in the conveyance of wastewater. Wastewater in force mains and pumping stations with long detention times are precursors to odor problems.

Odors (hydrogen sulfide) emanate from process units at a typical wastewater treatment plant. There will impacts due to odors emanating from screening, grit handling, process tanks, and dewatering equipment at the AWT plant. However, all process tanks at the AWT plant will be covered with aluminum or concrete covers to collect odorous air and multiple odor control technologies will be employed to treat odorous air prior to any discharge to the ambient air.

- K. Noise. Construction related noises for the collection system and AWT plant are anticipated and will create a short-term impact on the environment. Noises and vibrations will be caused by the operation of construction equipment, construction vehicles moving to and from the project site, and intermittent blasting of ground-level obstructions. The AWT plant is adjacent to the highway and away from residential and industrial areas; therefore, the temporary noise generated during construction will not be a nuisance.

Minimal long-term noise impacts include noise generated by the operation of wastewater pumps inside enclosed pump stations. Considering existing development, there will be ample distance between the four proposed pumping stations and nearby residential communities. However, very few existing residences will surround the pumping stations.

- L. Traffic. During the installation of the collection system, there will be short-term traffic impacts due to the excavation of existing roadways and placement of pipelines. Traffic impacts will include the shutdown of at least one lane of traffic and possibly more on secondary roadways. There will be traffic delays and possible alternate traffic routing. The wide area collection system network in Sloatsburg and Hillburn will be constructed in phases to keep the traffic moving throughout the Village. Short-term traffic impacts in Ramapo will be limited to construction of the collection system and force main along Route 17, Torne Valley Road, and Johnsontown Road.

During construction of AWT plant, there will be a short-term temporary increase in traffic due to the influx of construction equipment and personnel entering and exiting the construction site via Route 17. Additional personnel and delivery vehicles traveling to and from the AWT plant in the long-term will not generate a significant increase in the amount of permanent traffic on any of the surrounding transportation systems, including Route 17. Four to six employees at the AWT plant will only require, on average, four trips per person per vehicle per day. In addition, one chemical delivery vehicle will be expected at the plant every one to two weeks and one sludge removal vehicle is expected at the plant once every three days.

Implementation of this project will contribute to residential development that will increase traffic on local roads in the project area. Furthermore, the wastewater collection system placed along Route 17 will make commercial and industrial development more desirable along this highly traveled corridor in Hillburn, Sloatsburg and Ramapo. Traffic increase

due to growth at full build-out was evaluated based on a simple traffic model utilizing population projections considering morning peak traffic period where people will travel on Routes 59 and 17 to their destinations (e.g., work place, school).

Combined traffic in Hillburn will increase approximately 83 percent at full build-out with more than 140 vehicle trips being added every year to existing traffic; between a four and five percent increase in traffic volume annually. Traffic along Routes 59 and 17 from employees traveling in vehicles to commercial and industrial buildings (excluding vehicles originating from residences) will increase to approximately 88 percent at full build-out with over 120 vehicle trips added to these roadways annually. Without plans for traffic control, traffic flow will be interrupted along Routes 59 and 17 as vehicles will be entering and exiting these commercial and industrial facilities and traffic conditions will deteriorate.

Combined traffic in Ramapo will increase by about 127 percent at full build-out with no less than 145 vehicle trips added every year to existing traffic, which equates to a six to seven percent increase in annual traffic volume. There will be an approximate 109 percent increase in traffic along Route 17 from employees traveling in vehicles to commercial and industrial locations (excluding vehicles originating from residences) at full build-out with more than 100 additional vehicle trips on Route 17 annually. With no signalized traffic equipment along Route 17 in Ramapo, vehicles entering and exiting these commercial and industrial facilities will interrupt traffic flow along Route 17 and traffic conditions will worsen.

Combined traffic in Sloatsburg will increase by approximately 89 percent at full build-out with over 140 vehicle trips added every year to existing traffic, or four to six percent annually. There will be at least a 96 percent increase in traffic along Route 17 from employees traveling in vehicles to commercial and industrial locations (excluding vehicles originating from residences) at full build-out with more than 55 additional annual vehicle trips on Route 17. With three signalized traffic positions along Route 17 in Sloatsburg and depending where the commercial and industrial facilities will be situated, there may be minimal impacts to traffic flow; however, future traffic studies will better determine the level of service and if improvements are needed for Route 17.

The 4% or more annual traffic volume increase for Hillburn, Sloatsburg, and Ramapo is considered high given that, according to the 1997 DEIS, a 1% increase is considered normal by NYSDOT. The residential and non-residential construction along Routes 17 and 59 may cause levels of service reductions sooner than NYMTC has predicted.

- M. Air Quality. Heavy construction equipment used for installation of the collection system and AWT plant (excavators, backhoes, loaders, small transport trucks, and large dump trucks) will be required to excavate and remove materials, grade the sites, and transport materials to off-site locations. For diesel equipment, approximately 30 ten-wheel dump trucks and four large excavators will be used during the first six months for construction, followed by five ten-wheel dump trucks, two large excavators, two backhoe loaders, four utility trucks/vans will be used during the eighteen month period following the initial six month period. Emissions were estimated based on each piece of construction equipment

operating 40-hours during a normal week along with a load factor (LF) (average fraction of the power used by the equipment in comparison to the equipment brake horse power) and an “ON” factor (expected fraction of time for each engine on a piece of equipment is running) adjustment for each diesel-fueled equipment used in the construction project.

Emissions from the diesel-fueled dump trucks, excavators, backhoes, and loaders were estimated using emission factors from EPA’s “Exhaust and Crankcase Emission Factors for the Non-road Engine Modeling – Compression Ignition” guidelines. Emissions from the sparking ignition type utility trucks/vans were estimated using emission factors from “Gasoline and Diesel Industrial Engines” (AP-42) guidelines. Total NO_x and VOC emissions from all construction equipment considered for the duration of 24-months were estimated to be 12.7 tons and 0.91 tons, respectively, which is well below the annual limit of 25 tons set by the air quality conformity regulations in Section 176(c) of the CAA. There are no direct short-term air quality impacts from construction related vehicle equipment.

Operating heavy machinery such as excavators, trucks, paving equipment, and forklifts will generate dust during construction of the collection system and AWT plant. Particulate matter from excavation and backfilling activities and the cutting of concrete or brick materials will occur.

The anticipated increase in traffic volume in the project area at full build-out may impact air quality. If receiving federal funding, current and future transportation improvement projects and activities within the project area will be subject to the transportation conformity regulations under the CAA Section 176(c).

- N. Environmental Justice. To comply with Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations), communities with minority and low-income populations within the project area were evaluated to ensure that all people residing in these communities receive fair treatment and have the opportunity for meaningful involvement in all phases and aspects of the proposed project. Additionally, the EJ evaluation considered whether minority and low-income communities would bear a disproportionately high and adverse human health and environmental burden from the implementation of the proposed project. The EJ evaluation was performed according to EPA’s Region 2 Interim EJ Policy (December 2000) utilizing its *Guidelines for Conducting EJ Analyses*.

Preliminary screening for potential EJ communities was conducted for Rockland and Bergen Counties using EPA’s Region 2 EJ Demographic Tool. Utilizing 2000 Census data, Hillburn in Rockland County and Mahwah in Bergen County are potential EJ communities due to the high level of minorities present relative to the reference communities. Hillburn has a 56.7 percent minority population exceeding the NYS cutoff reference of 51.5 percent. The northwestern cluster of Mahwah has a 53.8 percent minority population, which exceeds the 48.5 percent New Jersey State cut-off reference. Hillburn and Mahwah were further evaluated in an environmental load profile (ELP).

An ELP is a site-specific analysis used to determine if the environmental burden placed on these communities is disproportionately high and adverse. The results for toxic release inventory, facility density indicator, air toxics indicator for cancer risk, and air toxics indicator for non-cancer hazard index for Hillburn and Mahwah are either at or below the state-wide reported benchmarks, which received rank value of less than one or zero. The toxic release inventory of 8.78 for Hillburn is slightly higher than the New York State Reference of 8.21, but with a risk ranking of less than one. Hillburn is not categorized as having a disproportionately high environmental burden because the area is at very low risk with regard to exposure, toxicity, and quantity of inventoried chemicals in the air in Hillburn. According to the ELP results, there are no environmental burdens placed on Hillburn or Mahwah with the implementation of this project, so there will be no disproportionately high and adverse environmental impacts.

Even so, because of the siting of the AWT plant in Hillburn, RCSD No. 1 and Hillburn have an inter-municipal agreement, which provides several benefits to the residents of Hillburn. The initial agreement included reduced user charges and the use of a portion of a new maintenance facility by the Hillburn Public Works Department. Hillburn will be given a lower sewer rate than the remaining part of the service area and use of the plant garage facilities.

- O. Cumulative Impacts. The potential exists for future wastewater discharges from other construction projects within the vicinity of the AWT plant. Table 6 lists discharges to Ramapo River from proposed or existing facilities that are being considered for new construction or replacement/upgrades of existing facilities.

Table 6 – Future Wastewater Treatment Facilities

| Treatment Plants | Capacity (mgd) | Notes |
|---------------------------------|-----------------------|--|
| Sterling Forest | 2.9 | --- |
| Kiryas Joel | 1.0 | --- |
| Moodna Basin/ Greenwood Lake | 12.0 | Replace 4 mgd plant and NYSDEC accepted 0.8 mgd in sewer hook-ups |
| Tuxedo | 0.5 to 1.0 | Replace an existing treatment plant and sewer Tuxedo Reserve development |

Table 7 includes wastewater generation, water demand, and traffic generation from residential and commercial entities within the project area that were not included as part of this project. These proposed subdivisions or residential developments must undergo multiple levels of approvals, permits, etc. before construction.

Table 7 – Future Development within Project Area

| Development inside project area within Sloatsburg | # Dwell. Units or s.f. | Wastewater Generation (gpd) ⁽¹⁾ | Water Demand (gpd) ⁽²⁾ | Traffic Generation (vehicles) ⁽³⁾ |
|--|-------------------------------|---|--|---|
| Formerly Oakbrook Shopping Center | 130,000 s.f. | 15,000 | 11,000 | 390 |
| Benedetto Farms | 24 | 8,000 | 6,000 | 48 |
| Stony Brook Farms | 22 | 6,600 | 5,500 | 44 |
| Formerly Hidden Valley Apartments | 300 | 90,000 | 75,000 | 600 |
| Eagle Valley Subdivision | 110 | 33,000 | 27,500 | 220 |
| Whispering Valley Subdivision | 66 | 20,000 | 16,500 | 132 |
| Rapino Subdivision | 62 | 20,000 | 15,500 | 124 |
| Senior Citizen Center Housing ⁽⁴⁾ | 100 | 30,000 | 25,000 | 125 |
| Osinga Subdivision | 10 | 3,000 | 2,500 | 20 |
| Approximate Total | 694 | 225,600 | 184,500 | 1,703 |

(1) Wastewater generation flows was estimated based on 300 gpd per dwelling unit.

(2) Water demand was estimated based on 250 gpd per dwelling unit.

(3) Traffic generation is estimated based on 2 vehicles per dwelling unit traveling during AM peak hours.

(4) Traffic from age restricted areas was estimated based on 125 % of # of dwelling units.

Table 8 lists wastewater generation, water demand, and traffic generation from residential and commercial entities outside of the project area, but within Ramapo, that were also not included as part of this project. These subdivisions or residential developments will also undergo multiple levels of approvals, permits, etc. before construction.

Table 8 – Future Development Outside Project Area

| Development outside project area within Ramapo | # Dwell. Units | Wastewater Generation (gpd) ⁽¹⁾ | Water Demand (gpd) ⁽²⁾ | Traffic Generation (vehicles) ⁽³⁾ |
|---|-----------------------|---|--|---|
| Diamond Valley | 25 | 7,500 | 6,250 | 50 |
| Pierson Lakes | 74 | 22,200 | 18,500 | 148 |
| Sterling Mine RR-80 | 91 | 27,300 | 22,750 | 182 |
| Age-Restrict ⁽⁴⁾ | 251 | 75,300 | 62,750 | 125 |
| Reitman Plateau RR-80 | 161 | 48,300 | 40,250 | 322 |
| RR-40 | 463 | 138,900 | 115,750 | 926 |
| Lorterdan (4/13/2005) | 292 | 88,000 | 73,000 | 365 |
| Total | | | | |
| <i>Current Zoning</i> | 643 | 193,300 | 160,750 | 1,067 |
| <i>Re-Zoning</i> | 1,105 | 331,900 | 276,250 | 1,466 |

(1) Wastewater generation flows was estimated based on 300 gpd per dwelling unit.

(2) Water demand was estimated based on 250 gpd per dwelling unit.

(3) Traffic generation is estimated based on 2 vehicles per dwelling unit traveling during AM peak hours.

(4) Traffic from age restricted areas was estimated based on 125 % of # of dwelling units.

River water quality in New Jersey may experience increased levels of organics due

to the increase in the number of discharges from other treatment plants and subsurface disposal systems currently being considered for construction.

RCSD No. 1 plans to design and construct the 1.5 mgd AWT plant in a modular fashion so that its capacity can be easily expanded to 5.0 mgd in the future. The SPDES permit was uniquely prepared by NYSDEC so that it would enforce wastewater effluent quality for the 1.5 mgd AWT plant capacity with provisions to enforce wastewater effluent limits for the 5.0 mgd AWT plant capacity. Estimates show that with expansion of the AWT plant from 1.5 mgd to 5.0 mgd there may be an additional 0.4 mgd consumptive water lost, which will reduce the yield from the Wanaque Reservoir system in New Jersey. NJDEP is concerned that a decrease in safe yield will result in a premature curtailment of the minimum stream flows over the regulating weir. With a 5.0 mgd discharge to Ramapo River, NJDEP is concerned that downstream wells and the Wanaque Reservoir may be adversely affected by the river flow water quality during drought conditions when wastewater comprises a larger fraction of total river. Additional environmental impact analyses must be conducted prior to any expansion of the AWT plant that may be necessary to accommodate future growth.

In the future, due to increased growth from development in the area, there is potential for higher demand to release water from Potake Pond and/or the Harriman State Park lakes to further augment river flows to prolong pumping of these wells. This process is utilized until each one of these ponds and/or lakes reaches their drawdown limit. The frequency and duration of releasing water from Potake Pond may increase. Due to the physical nature of the Potake Pond straddling between New York and New Jersey, the New Jersey side of the pond is shallower and has a smaller surface area than the New York side. NJDEP is concerned that frequent overdrafting of Potake Pond due to drawdown of over 7 to 10-feet during hot and dry periods would result in a large portion of the Potake Pond on the New Jersey side to dry up, which would adversely affect wetlands, wildlife, and groundwater.

VIII. Steps to Minimize Adverse Effects on the Environment

- A. Surface Water and Groundwater Quality. RCSD No. 1 will obtain and comply with any necessary NYSDEC stormwater or stream encroachment permits. RCSD No. 1 will develop a detailed dewatering operations plan to be approved by NYSDEC. No sediment or silt laden water from dewatering operations will be discharged directly into any stream, wetland, surface water and groundwater source, or storm sewer. Any contaminated groundwater encountered in conjunction with excavating soils for off-site disposal will be provided with an appropriate treatment in accordance with a NYSDEC approved interim remedial measures work plan.

Under the Stormwater Phase 2 Final Rule for construction programs, Stormwater Pollution Prevention Plans (SWPPs) with Notices of Intent (NOI) will be developed by RCSD No. 1 for the construction of the AWT plant and collection system. The SWPP will be submitted to NYSDEC for review and approval. RCSD No. 1 will request general SPDES permits for stormwater control from NYSDEC prior to starting construction of the AWT plant and collection system.

To ensure long-term protection of the river and aquifer, the effluent discharge from the

AWT plant will be continuously monitored via RCSD No. 1 sampling program to ensure that the wastewater effluent remains in compliance with the SPDES permit requirements. Regular equipment inspections and adherence to operation and maintenance (O&M) procedures on the AWT plant and collection system equipment will minimize the loss of function from aging and will help prevent premature equipment failure. Emergency coordination and response plans, including plans for notification of local and state agencies and the public, will be developed and updated frequently. Additionally, these plans must include public notification procedures for state and local agencies on both sides of the border should an inadvertent discharge of untreated wastewater to the Ramapo River occur.

With regard to plant operation, safeguards will be incorporated to reduce the likelihood of an inadvertent discharge from the AWT plant into the river should a catastrophic failure occur at the AWT plant. An emergency generation facility will provide backup power to run the entire AWT plant in the event that a power outage occurs. The AWT plant technology will have redundant configurations to ensure continuous treatment at all flows and solids loadings, even when one process unit is out of service. A diversion forcemain from the AWT plant to the existing Mahwah pump station in Suffern will be installed to serve as an emergency conveyance line. This will allow a partial or total transfer of wastewater from the AWT plant to the existing Orangeburg plant for a short period of time. The Orangeburg plant has emergency power back-up systems to operate process equipment if there is a power outage.

To meet the purpose and need for this project, RCSD No. 1 will give higher priority to existing residential dwellings and commercial/light industrial facilities that are currently using subsurface disposal systems within the project area.

- B. Vegetation and Wildlife. Vegetated areas disturbed by the sewer installation process and construction of the AWT plant will be seeded or replanted with native species. Invasive vegetation will be avoided. Local and state erosion control and vegetative protection measures will be specified and employed before, during, and after construction. These include: silt fences, hay bales, snow fence and other methods specified in New York State technical standards.

Construction of the outfalls will be performed in the less sensitive times of the year for aquatic life, and not in May when the small mouth bass spawn, to avoid impacting any aquatic habitat.

- C. Endangered and Threatened Species. To avoid/minimize timber rattlesnake disturbance, injury, and mortality; construction crews will be instructed on procedures to follow if a timber rattlesnake is encountered (including removal of any timber rattlesnake to a safe area by a qualified rattlesnake responder). Measures to minimize impact will consist of temporarily placing silt fencing around the excavation site. A qualified rattlesnake monitor will check the enclosed area for the presence of timber rattlesnakes at the start of silt fence placement and after the area is completely fenced. If timber rattlesnakes are present, they will be removed by necessary means and relocated to an area of their natural habitat nearer

the den and out of harms way. If the area contains suitable rock cover for timber

rattlesnakes, the habitat will be described, flagged as an area to try to avoid, and photographic documentation of the habitat will be taken for possible habitat restoration. If no timber rattlesnakes are present in the fenced area, excavation/construction will commence as planned.

- D. Environmental Sensitive Areas. Federal, state and local permits will be required for sewer line crossings of federal and state regulated wetlands/watercourses and streams. Measures will be taken to mitigate any potential downstream impacts to the Ramapo River, including construction of cofferdams and/or siltation/settling impoundments when installing outfalls or collection system components.

NYSDOH will update the WHP management plans to include pertinent information and contingency plans to protect the wellfield from any potential contamination. Public notification procedures should be included in the WHP should the wells become contaminated. Under the Source Water Assessment Program, NYSDOH will update the source water assessment, including the inventory of potential contamination sources.

- E. Population Growth Impacts/Secondary Impacts of Induced Growth. According to NYSDEC's January 2003 final designation criteria implemented by the new Stormwater Phase 2 Rule, existing municipal stormwater sewers throughout Hillburn, Ramapo, and Sloatsburg are designated as "regulated" Municipal Separate Storm Sewer Systems (MS4s). Each municipality responsible for MS4s will implement and adhere to NYSDEC's SPDES General Permit for Stormwater Discharges from MS4s to further protect the surface water and groundwater sources within the Ramapo River Basin from stormwater runoff from existing and future residential and non-residential development, including runoff from all pre- and post-construction related activities. Each municipality will develop, implement, and enforce a Phase 2 Stormwater Management Program (SWMP) designed to reduce the discharge of pollutants from MS4s to the maximum extent practicable.
- F. Aesthetics. To ensure that the AWT plant is an aesthetically pleasing environment to the public landscaping with multiple plantings will be planted around the AWT plant site perimeter. Step excavation and plantings with native plants will be used for the hillside and surrounding environment.
- G. Odors. Odors in the collection system will be eliminated using chemical additives (i.e., peroxide or permanganate) or other acceptable practices at the pumping stations as required.
- H. Noise. Work will primarily be performed during normal working hours between 7:00 am and 5:00 pm to control noise related to trucks, construction equipment, blasting activities. The blasting operations will have a maximum noise level of 90 decibels as measured at the property line. This will be achieved through the use of low charge blasts and management of the location of the blasting. A blasting plan will be developed and in addition, the

blasting plan will require municipal notification to ensure that the appropriate authority is

fully aware of blasting plans and potential impacts and communicates these plans to the public as necessary. For all blasting activities, the Contractors will be required to adhere to state and local noise ordinance codes.

Noise attenuation devices will be outfitted on all process, mechanical, odor control, pumping, and emergency generation equipment to ensure that levels will not exceed the ambient conditions and will not be intrusive to RCSD No. 1 staff and people living in residences nearby. For equipment that cannot be outfitted with sound attenuation devices, RCSD No. 1 staff will wear OSHA approved ear protection devices when entering areas with equipment emitting harmful noise.

- I. Traffic. Alternative traffic routing, detouring, and flagging will be used to keep vehicles moving during installation of sewer lines and mains to alleviate short-term traffic impacts. On state roads, work will be restricted to low traffic hours after 9:30 am or before 3:30 pm with at least one lane of traffic remaining open in each direction.

Since no major transportation improvement projects are planned at this time, traffic studies should be conducted by each municipality in collaboration with NYSDOT in the future to determine improvements necessary to alleviate potential adverse traffic on local roads and Routes 59 and 17 as residential and non-residential development occurs within the project area.

- J. Air Quality. The Contractor will be responsible for observing all local and federal anti-pollution ordinances for construction equipment. To minimize air quality impacts from construction activities, equipment will be outfitted with emission control devices and restricted from unnecessary engine idling to the highest extent practical.

The contractor will adhere to dust control and mitigation measures, such as water spray suppression, and ensure that air quality standards are met during all phases of construction. The use of calcium chloride and/or petroleum products for dust control will be prohibited.

Rockland County will be required to demonstrate conformity on all transportation activities in the area to NYMTC to meet the New York's air quality goals established in a State Implementation Plan (SIP). Rockland County will report all of the necessary information obtained from air emission analyses for current and future transportation projects within the project area as well as the entire County to NYMTC. NYMTC will review emission estimates from all of the transportation activities and ensure that these activities fully conform and do not cause new air quality violations, worsen existing violations, or delay attainment of the NAAQS.

IX. Coordination of Environmental Review and Reference Documents

- A. Public Participation Program. As part of the New York State Environmental Quality Review (SEQR) process, meetings with the Citizen Advisory Committee (CAC) and Technical Advisory Committee (TAC), were held on December 7 and 19, 1999; January 2000; July 18, 19 and 20, 2000; April 23, 2001; June 20, 2001; November 8 and 14, 2001; May 21, 2002; June 4 and 10, 2002; December 3 and 17, 2002; and October 7 and 9, 2003. Public Hearings were held on July 30, 1997 and September 26, 2002. The Public Hearing

for condemnation procedures was on October 23, 2003.

During the design of the collection system, Public Information Meetings brought the public up to date with this project's progress as well to solicit questions or concerns regarding the collection system.

The CAC, TAC, and attendees at the public information meetings became actively involved in the AWT plant siting study and choosing the proposed location. The CAC met on five occasions (March 26, April 30, June 12, September 13, and November 8, 2001) to discuss the project goals, effluent requirements, AWT plant size, possible locations, site screening process, siting criteria; and to present any questions or concerns to the Engineer, RCSD No. 1, or County. The TAC also met at different times on the same dates to review the same components of the project, in addition to more in-depth discussion regarding water quality standards, proposed effluent concentrations, and effects on the surrounding environmental systems.

RCSD No. 1 distributed educational materials to affected parties via mass mailings, material distribution at County offices and libraries, and by creating a project website (www.westernramaposewers.com).

B. Tribal Nations and Federal, State and Local Agencies Consulted.

County of Rockland
New York State Department of Transportation
New York State Thruway Authority (TAC*)
New York State Department of Environmental Conservation
New York State Office of Parks, Recreation & Historic Preservation (TAC)
New Jersey Department of Environmental Protection (TAC)
Palisades Interstate Park Commission (TAC)
Ramapough Mountain Indians, Inc. (CAC*)
Ramapo River Committee (CAC)
Rockland County Conservation Association (CAC)
Rockland County Department of Planning
Rockland County Division of Environmental Resources (CAC & TAC)
Rockland County Drainage Agency
Rockland County Environmental Management Council (CAC)
Rockland County Health Department (TAC)
Rockland County Sewer District No. 1 (CAC & TAC)
Rockland County Soil & Water Conservation District (CAC & TAC)
Torne Valley Preservation Association (CAC)
Town of Ramapo (CAC)
Town of Tuxedo (CAC)
United States Environmental Protection Agency (TAC)
United Water Management & Services (TAC)
Village of Hillburn (CAC)

Village of Suffern (CAC)

Village of Sloatsburg (CAC)

* Acronyms CAC and TAC denotes Citizen Advisory Committee and Technical Advisory Committee, respectively.

There are no federally recognized Tribal Nations within the region; therefore, construction of the AWT plant will not have an impact on any tribal lands or activities. However, the non-federally recognized Ramapough Mountain Indians, Inc., was represented on the Citizen Advisory Committee.

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